

**REMARKS**

The present Amendment amends claims 36 and 38, cancels claim 42 and leaves claims 37 and 39-41 unchanged. Therefore, the present application has pending claims 36-41.

Figs. 2-5 stand objected to being that the Examiner alleges that these figures should be designated by a legend "Prior Art". Filed on even date herewith are Proposed Drawing Correction/Replacement Sheets adding the legend "Prior Art" to Figs. 2-5. Approval of the Proposed Drawing Correction/Replacement Sheets is respectfully requested.

Claims 36, 38 and 42 stand rejected under 35 USC §103(a) as being unpatentable over Beglin (U.S. Patent No. 4,638,424) in view of Bond (U.S. Patent No. 6,275,938); claims 37, 39 and 41 stand rejected under 35 USC §103(a) as being unpatentable over Beglin and Bond and further in view of Lambrecht (U.S. Patent No. 6,549,954); and claim 40 stands rejected under 35 USC §103(a) as being unpatentable over Beglin and Bond in view of Bernth (U.S. Patent No. 6,285,978. As indicated above, claim 42 was canceled. Therefore, this rejection with respect to claim 42 is rendered moot. This rejection with respect to the remaining claims 36-41 is traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 36-41 are not taught or suggested by Beglin, Bond, Bernth or Lambrecht whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

The present invention is directed to an object access module which is sent to a storage apparatus equipped with a block access module, i.e. a program module presenting block-based I/O function (read/write function for block units), from a computer via network. The object access module is a program module for providing read/write I/O function to data stored in a plurality of non-contiguous storage units by using the above mentioned block access module and is registered in an active network storage controller of the storage apparatus. Hence, the storage apparatus is controlled in a manner to implement an object I/O function.

The present invention as now more clearly recited in the claims is directed to a method for implementing an extensible network attached storage in a system including a plurality of computers, at least one secondary storage apparatus having a storage medium, which stores data in units each being a block, in which the data is kept after shutting down a power source and an active network controller for inputting and outputting a block-based input/output (I/O) request between the computer and the storage medium. According to the present invention at least one application program is deployed in one of the computers executing data in units each being an object wherein the application program issues object based I/O to the secondary storage apparatus.

According to the present invention the method includes receiving an object based I/O request from one of the computers, downloading an access module describing how a requested object is stored in the secondary storage apparatus to the active network storage controller from one of the computers, implementing the object access module to convert the object based I/O

request to a block based I/O request, sending the block based I/O request to the secondary storage apparatus, receiving a response to the block based I/O request from the secondary storage apparatus and transmitting a response to the object based I/O request.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or suggested by Beglin, Bond, Lambrecht and Bernth whether taken individually or in combination with each other as suggested by the Examiner.

Beglin merely discloses data structure, for example, "a set of primary DASD volumes 14, also labeled L0 DASD..." (Column 6, line 48-). Beglin however, does not teach or suggest the features of the present invention which has double layers of program modules. Further, Beglin does not teach or suggest that the storage apparatus becomes having the upper function by sending or being downloaded the upper program module from the exterior of the storage apparatus such as in the present invention. Even further, Beglin does not teach or suggest the object access module of the present invention as recited in the claims.

As recited in the claims the object access module describes how a requested object is stored in the secondary storage apparatus. Such features are clearly not taught or suggested by Beglin.

Even further still, there is no teaching or suggestion in Beglin that the object access module is downloaded from the computer to the active network

storage controller and is implemented by the active network storage controller so as to convert the object based I/O request to a block based I/O request so as to retrieve application data in a block corresponding to the object. Such features are clearly not taught or suggested by Beglin.

Thus, Beglin fails to teach or suggest receiving an object based I/O request from one of the computers and downloading an access module describing how a requested object is stored in the secondary storage apparatus to the active network storage controller from one of the computers as recited in the claims.

Further, Beglin fails to teach or suggest implementing the object access module to convert the object based I/O request to a block based I/O request to a block based I/O request, sending the block based I/O request to the secondary storage apparatus, receiving a response to the block based I/O request from the secondary storage apparatus and transmitting a response to the object based I/O request as recited in the claims.

Therefore, as is quite clear from the above, the features of the present invention as now more clearly recited in the claims are not taught or suggested by Beglin.

The above described deficiencies of Beglin are not supplied by any of the other references of record. Particularly, the above described features of the present invention shown above not to be taught or suggested by Beglin are not supplied by of Bond, Lambrecht or Bernth. Therefore, combining the teachings of Beglin with one or more of Bond, Lambrecht and Bernth still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

In the Office Action the Examiner readily admitted that Beglin does not teach or suggest the object access module as recited in the claims. The Examiner attempts to supply this deficiency by combining Beglin with Bond.

In the Office Action the Examiner refers to an applet as taught in col. 4, lines 30-38 in Bond as being equivalent to the object access module. However, there is absolutely no teaching or suggestion in Bond that the applet converts an object based I/O request into a block based I/O request as recited in the claims. In fact, there is no teaching or suggestion in Bond as to how to address the problem that occurs when combining the use of an application which accesses data using object based I/O requests with a storage apparatus which stores data in block units rather than object units. As such Bond does not supply any of the deficiencies noted above with respect to the use of Beglin to reject the claims of the present application.

Thus, Bond the same as Beglin, fails to teach or suggest receiving an object based I/O request from one of the computers and downloading an access module describing how a requested object is stored in the secondary storage apparatus to the active network storage controller from one of the computers as recited in the claims.

Further, Bond the same as Beglin, fails to teach or suggest implementing the object access module to convert the object based I/O request to a block based I/O request and sending the block based I/O request to the secondary storage apparatus as recited in the claims.

Still further, Bond the same as Beglin, fails to teach or suggest receiving a response to the block based I/O request from the secondary

storage apparatus and transmitting a response to the object based I/O request as recited in the claims.

Therefore, as is quite clear from the above, both Beglin and Bond suffer from the same deficiencies relative to the features of the present invention as recited in the claims and as such when combined fails to teach or suggest the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 36 and 38 as being unpatentable over Beglin in view of Bond is respectfully requested.

The above described deficiencies of both Beglin and Bond are also not supplied by Lambrecht or Bernth. Lambrecht is merely relied upon by the Examiner for an alleged teaching that the object access module obtains a data value or location of data in a storage unit corresponding to a specification which either an object offset, an object offset size or an object tag specifying the type of data to be retrieved. Bernth is merely upon by the Examiner for an alleged teaching that the object description data is data for specifying an attribute or an inter-block reference by a lexical analyzing program or a parser generating grammar of the application data. Applicants fail to find the alleged teachings relied upon by the Examiner in either of the Lambrecht and Bernth references. It appears that the Examiner is merely making unsupported allegations and mis-describing the teachings in both Lambrecht and Bernth in order to meet the limitations of the present invention as now more clearly recited in the claims.

However, even if such alleged teachings could be found in Lambrecht and Bernth, it is quite clear that these references do not supply the

deficiencies noted above with respect to the use of Beglin and Bond to reject the claims of the present application. Thus, the same arguments presented above with respect to both Beglin and Bond apply as well to Lambrecht and Bernth since they suffer from the same deficiencies as both Beglin and Bond relative to the features of the present invention as now more clearly recited in the claims.

Therefore, the combination of Beglin and Bond with one or more of Lambrecht and Bernth fails to teach or suggest the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 37, 39 and 41 as being unpatentable over Beglin and Bond in view of Lambrecht and the 35 USC §103(a) rejection of claim 40 as being unpatentable over Beglin and Bond in view of Bernth is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 36-42.

In view of the foregoing amendments and remarks, applicants submit that claims 36-41 are in condition for allowance. Accordingly, early allowance of claims 36-41 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (520.37728X00).

Respectfully submitted,

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